

California Environmental Protection Agency



Air Resources Board

**ASSEMBLY BILL 118 AIR QUALITY IMPROVEMENT
PROGRAM FUNDING PLAN FOR FISCAL YEAR 2012-13**

Release Date: **May 29, 2012**

Approved: **June 28, 2012**

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Executive Summary

The Air Quality Improvement Program (AQIP) is a voluntary incentive program created under the *California Alternative and Renewable Fuel, Vehicle Technology, Clean Air, and Carbon Reduction Act of 2007* (Assembly Bill 118; Núñez, Chapter 720, Statutes of 2007). AQIP provides funding through 2015 for clean vehicle and equipment projects that reduce criteria pollutant and air toxic emissions, often with concurrent climate change benefits.

AQIP expands the Air Resources Board's (ARB or Board) portfolio of air quality incentives, providing the opportunity to fund projects not covered by other incentive programs that focus on near-term emission reductions. AQIP is ARB's only incentive program structured to enable investments in technology advancing projects that also provide immediate emission reductions.

AQIP investments to date support the deployment of hybrid and zero-emission trucks, zero-emission and plug-in hybrid passenger cars, and other advanced technologies critical to meeting California's long-term air quality and climate change goals. These investments are an important first step in the fundamental transformation of the California vehicle fleet to one with widespread use of zero- and near-zero emission vehicles. ARB staff proposes continuing these investments in the 2012 funding cycle. AQIP projects are working as envisioned, and their streamlined design has made them accessible to consumers. Staff is proposing several refinements aimed at encouraging broader program participation, boosting demand for heavy-duty hybrid and zero-emission trucks, and managing uncertainty surrounding ARB's limited funding for light-duty vehicles.

The Governor's proposed Fiscal Year 2012-13 State Budget provides \$40 million for AQIP projects. ARB's regulatory guidelines governing implementation of AQIP require that the Board approve an annual Funding Plan describing how AQIP funds will be spent each fiscal year. The *Proposed Assembly Bill 118 Air Quality Improvement Program Funding Plan for Fiscal Year 2012-13* (Funding Plan) outlines: (1) ARB priorities for the funding cycle; (2) funding allocations by project category; (3) project category descriptions, including refinements based on public input and evaluation of previous years' project implementation; and (4) contingency provisions to address uncertainties in available funding levels.

Summary of the Fiscal Year 2012-13 Funding Proposal

For the fiscal year 2012-13 funding cycle, ARB staff proposes to focus most AQIP funding on the two largest project categories from previous years – the Clean Vehicle Rebate Project, which provides consumer rebates for zero-emission and plug-in hybrid passenger cars, and the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project, which targets commercial vehicle applications. In developing AQIP, ARB staff envisioned that these project categories would receive funding for multiple years. While we are seeing strong demand for funding in the Clean Vehicle Rebate Project, demand

for vouchers in the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project has slowed over the past year. However, hybrid and electric truck technologies are at a key point where continued public incentives can help them penetrate the California marketplace and become mainstream choices.

Staff also proposes to continue a small allocation for advanced technology demonstrations. These are an important part of AQIP because successful demonstration projects can potentially lead to new deployment project opportunities.

Table ES-1 presents ARB staff's proposed fiscal year 2012-13 project category allocations along with the estimated number of vehicles that these funding levels would support. Table ES-1 shows 2 separate funding levels to manage uncertainty regarding available funding. The \$40 million level reflects the funding level for AQIP projects in the Governor's proposed State Budget. The \$27 million level is a conservative estimate of total funding based on AQIP revenues over the past 3 years, which have been 25-30 percent lower than the appropriated amount. ARB staff proposes to initially issue solicitations for the lower funding levels with provisions to scale up funding if revenues are higher or additional funding becomes available. The Funding Plan includes contingency provisions to address this and other elements of uncertainty.

Table ES-1: Proposed Fiscal Year 2012-13 Project Category Funding Levels

Project Category	\$27 Million Plan Based on Recent Revenues		\$40 Million Plan¹ Revised Budget Appropriation	
	Proposed Allocation	Potential Vehicles	Proposed Allocation	Potential Vehicles
Clean Vehicle Rebate Project ²	\$15 M	7,700	\$21 M	10,700
Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project	\$10 M	350	\$14 M	500
Advanced Technology Demonstration/Testing	\$2 M	N/A	\$5 M	N/A

1- Based on Governor's revised State Budget of \$43 million minus estimated administrative costs.

2- An additional \$3 million from fiscal year 2008-09 is being reallocated to the Clean Vehicle Rebate Project.

ARB staff proposes continuing its large investment in the Clean Vehicle Rebate Project at the same level as last year. In addition, \$3 million from fiscal year 2008-09 is being reallocated to the Clean Vehicle Rebate Project. In the past year, there has been a substantial increase in the number and diversity of zero-emission and plug-in hybrid vehicles offered for sale in California, and this trend is expected to continue. Even with this large investment, staff expects that the proposed funding will only provide rebates for about half of the vehicles sold.

The \$10 million proposed for the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project would provide funding for about 350 new hybrid and zero-emission trucks and buses that staff expects, when combined with previous years' funding, will adequately support the continuing deployment of hybrid and zero-emission technology into the California truck fleet in fiscal year 2012-13. Several refinements to the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project are proposed with the goals of boosting demand and encouraging additional fleets to purchase hybrid and zero-emission trucks.

Staff also proposes a \$2 million allocation to continue funding for advanced technology demonstrations. Proposed demonstration project priorities include zero-emission off-road equipment and zero-emission transit vehicles.

Recommendation

Staff recommends that the Board approve the proposed Funding Plan which builds on the success of the first three years of AQIP.

I. Introduction

The Air Quality Improvement Program (AQIP) is a voluntary incentive program created under the *California Alternative and Renewable Fuel, Vehicle Technology, Clean Air, and Carbon Reduction Act of 2007* (Assembly Bill 118). AQIP provides funding for clean vehicle and equipment projects that reduce criteria pollutant and air toxic emissions, often with concurrent climate change benefits. AQIP expands the Air Resources Board's (ARB or Board) portfolio of air quality incentives, providing the opportunity to fund projects not covered by other incentive programs that focus on near-term emission reductions.

AQIP is ARB's only incentive program structured to allow for investments in technology advancing projects. AQIP investments to date support the deployment of hybrid-electric vehicles, zero-emission vehicles (ZEV), and other advanced technologies that are critical to meet California's post-2020 air quality and climate change goals.

The Governor's proposed Fiscal Year 2012-13 State Budget allocates about \$40 million for AQIP projects, although historical revenues have been closer to \$30 million per year. ARB's regulatory guidelines governing implementation of AQIP require that the Board approve an annual Funding Plan describing how AQIP funds will be spent each fiscal year prior to spending ARB's annual appropriation. This *Proposed Assembly Bill 118 Air Quality Improvement Program Funding Plan for Fiscal Year 2012-13* (Funding Plan) outlines: (1) ARB priorities for the funding cycle; (2) funding allocations by project category; (3) project category descriptions, including refinements based on public input and evaluation of previous years' project implementation; and (4) contingency provisions to address uncertainties in available funding levels. In addition, the Funding Plan provides an overview and summary statistics on the implementation of the first 3 years of AQIP.

The remainder of this introductory chapter provides background on AQIP. The next chapter contains a summary of the fiscal year 2012-13 funding proposal, descriptions of the project categories and contingency provisions. The Funding Plan appendices include a status report on ARB's previously funded Assembly Bill 118 projects and a discussion on the deployment challenges for hybrid vehicles.

A. Implementation of AQIP

Program Purpose

AQIP provides funding through 2015 for clean vehicle and equipment projects. As with other ARB incentive programs, statute requires that emission benefits from AQIP be surplus to what is already required by local, state and federal regulation. Assembly Bill 118 allows for a range of eligible AQIP project categories, which can be divided into 3 general project types:

- *Commercial Deployment*: These projects include the next generation of advanced technology vehicles and equipment just reaching commercialization. Consumer incentives are needed because these products generally cost more than their traditionally powered (e.g., gas or diesel) counterparts, which can be a significant barrier to their purchase. Incentives will accelerate consumer acceptance and have the immediate benefit of reducing criteria pollutants, air toxics, and greenhouse gas emissions. Incentives help drive economies of scale by reducing production and sales costs as volume increases, and accelerating technology transfer to other sectors. Most AQIP funding awarded to date has been directed to commercial deployment projects.
- *Advanced Technology Demonstration*: ARB's goal in funding demonstration projects is to help demonstrate the viability of new, cleaner technology. AQIP funds are used to accelerate advanced technology vehicles, equipment or emission controls which are on the cusp of commercialization. The demonstration projects funded now could become deployment projects several years from now if the technology proves successful. ARB has included an allocation for advanced technology demonstration projects in each AQIP Funding Plan.
- *Research and Workforce Training*: Statute allows AQIP to fund research on the air quality impacts of alternative fuels, research to increase biofuel production, and workforce training related to advanced technologies. These project types provide the information and training necessary to develop the advanced fuels and vehicles most effective in reducing air pollution. To date, ARB has not directed AQIP funding to research and workforce training categories because there are already large investments being made by other agencies. For example, the California Energy Commission (Energy Commission) has already directed \$22.3 million to advanced technology work force training projects through its Assembly Bill 118 program and has allocated an additional \$2.5 million investment in the upcoming funding cycle. In addition, the Energy Commission has directed \$88.7 million for alternative fuel production with an additional allocation of \$20 million in the upcoming funding cycle. The Energy Commission has also allocated \$14.3 million for Emerging Opportunities that may include research on advanced fuels and innovative technologies. Accordingly, ARB staff again proposes deferring AQIP funding for these project categories.

Revenue Sources

Funding for AQIP comes primarily from the Smog Abatement Fee which is assessed annually for a vehicle's first 6 registration years in lieu of providing a biennial smog certification. Of the \$20 collected for each vehicle at the time of annual registration, \$4 is allocated to ARB for AQIP. In addition, a small portion of AQIP funding comes from 2 additional sources: the initial registration fee for new vessels and annual equipment identification plate fees.

Each year funding is allocated to ARB in the State budget for AQIP; however, over the past several years, actual revenues in the Air Quality Improvement Fund have been lower than the State budget allocation by about 25-30 percent. Accordingly, staff now proposes two sets of project allocations: a conservative estimate based on recent AQIP revenues and the amount identified in the revised State Budget.

Guiding Principles for AQIP

The Board established overarching implementation priorities and guiding principles for AQIP funds as part of Fiscal Year 2009-10 Funding Plan and reaffirmed the guiding principles in each subsequent funding plan. Staff believes these guiding principles continue to be appropriate and used them to identify projects for this funding year. Broad principles include:

- Support development and deployment of advanced technologies needed to meet California's longer-term, post 2020 State Implementation Plan (SIP) and climate change goals.
- Focus program funds on areas underserved through other incentive programs. Through the Carl Moyer Program and the Goods Movement Emission Reduction Program about \$2 billion is already being invested in near-term emission reductions, with the ancillary benefit of technology advancement. AQIP is ARB's sole source of incentives that allows for funding of the more advanced technologies.

The Federal Clean Air Act includes a provision that allows SIPs for areas with the worst air quality (the extreme ozone nonattainment areas – the South Coast and San Joaquin Valley) to rely on advanced, yet to be developed, technologies (also known as the “black box” commitment). Both South Coast and the San Joaquin Valley have ozone attainment dates in 2023 and new National Ambient Air Quality Standards are expected to set additional milestones to be met in the 2030 timeframe. Attainment of these standards will likely require much greater use of zero- and near zero-emission technologies; which are the same technologies needed to meet greenhouse gas emission reduction goals. Investing now in the next generation of vehicles, equipment, and emission controls is essential to meet this commitment because of the time needed for these technologies to penetrate the marketplace.

In order to meet the goal of reducing greenhouse gas emissions to 80 percent below 1990 levels by 2050 (Executive Order S-3-05), a fundamental transformation of the vehicle fleet will need to occur with zero-emission and hybrid vehicles making up a significant fraction of the fleet. Specifically, the 2007 *State Alternative Fuels Plan* envisions a 2050 vehicle fleet where 40 percent of California's transportation fuel is electricity or hydrogen. In January 2012, ARB made progress towards this goal with the adoption of the Advanced Clean Cars regulations which will require 1 out of every 7 new cars purchased in 2025 to be zero-emission or plug-in hybrid. This was followed by the Executive Order B-16-2012 that set a 2050 target for greenhouse gas emission

reductions from the transportation sector equaling 80 percent less than 1990 levels and directed state agencies to establish benchmarks for expanding the zero-emission vehicle market share with over 1.5 million zero-emission vehicles on California roads, easy access to zero-emission vehicle infrastructure, and petroleum displacement of at least 1.5 billion gallons by 2025. AQIP investments are an important early step in supporting this transformation.

For deployment projects, guiding principles also include:

- Accelerate deployment of proven advanced technologies to support significant penetration by the 2024 extreme ozone nonattainment area attainment date (i.e., focusing on new, commercialized technologies on the cusp of widespread deployment).
- Support consumer choice to buy cleaner vehicles, which may not have occurred without a monetary incentive.

Demonstration project guiding principles focus on projects that:

- Demonstrate the potential to provide cost-effective emission reductions.
- Show the potential to be economically viable without subsidy.
- Will be ready for commercialization within three years following demonstration.
- Have potential for use in the California marketplace.

II. Proposed Funding Plan for Fiscal Year 2012-13

For fiscal year 2012-13 funding cycle, ARB staff proposes to focus most of AQIP funding on the two largest project categories from previous years – the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project and the Clean Vehicle Rebate Project. There has been strong demand for funding in these areas, and both hybrid truck and electric vehicle technologies are at a key point where public incentives can help them penetrate the California marketplace and become mainstream choices. Staff also proposes to continue an allocation for advanced technology demonstrations. These are an important part of the program because successful demonstration projects can potentially lead to future deployment project opportunities in the future.

ARB staff envisioned that these project categories would be funded for multiple years in order to maintain continuity and provide a larger overall impact on the selected technologies. Continuing investments in the next generation of vehicles, equipment, and emission controls is critical to meet California's long-term air quality goals and will help start the transformation of the California fleet to one with widespread use of advanced technology hybrid and zero-emission vehicles.

ARB staff held two public workshops and six detailed public work group meetings in developing the proposed Funding Plan. ARB staff also maintains an open dialog with the Energy Commission and other agencies and stakeholders in the development of the Funding Plan. More information on this coordination may be found in Appendix B. As in previous years, ARB staff will hold additional public work group meetings through the year to update stakeholders on project implementation.

A. Summary of Funding Proposal

Table II-1 presents ARB staff's proposed fiscal year 2012-13 project category allocations along with the estimated number of vehicles that these funding levels would support. The table shows 2 separate funding targets. The \$40 million target reflects the funding level for AQIP projects in the Governor's proposed budget. The \$27 million target is a conservative estimate of total funding based on AQIP revenues over the past 3 years, which have been 25-30 percent lower than the appropriated amount. To manage the uncertainty regarding the funding that will ultimately be available for AQIP projects, ARB staff proposes to initially issue solicitations for the lower funding levels shown in Table II-1 with provisions to scale up funding if revenues are higher. For the purposes of this document, the lower levels are assumed in the project category discussions.

Table II-1: Proposed Fiscal Year 2012-13 Project Category Funding Levels

Project Category	\$27 Million Plan Based on Recent Revenues		\$40 Million Plan¹ Revised Budget Appropriation	
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1- Based on Governor's revised State Budget of \$43 million minus estimated administrative costs.

2- An additional \$3 million from fiscal year 2008-09 is being reallocated to the Clean Vehicle Rebate Project.

ARB staff proposes continuing its large investment in the Clean Vehicle Rebate Project at the same level as last year. In addition, \$3 million from fiscal year 2008-09 is being reallocated to the Clean Vehicle Rebate Project. In the past year, there has been a substantial increase in the number and diversity of zero-emission and plug-in hybrid vehicles offered for sale in California and this trend is expected to continue. Even with this large investment, ARB expects that the proposed funding will only provide rebates for about half of the vehicles sold. To help bridge this gap, the Energy Commission allocated \$5 million in the Fiscal Year 2012-13 Investment Plan for possible use by ARB to help meet consumer demand.

Correspondingly, staff is proposing a \$10 million Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project allocation. Combined with the \$21 million in funding from year 2 and 3, this will provide funding for about 1,000 new hybrid and zero-emission trucks and buses that staff expects will adequately support the continuing deployment of these technologies into the California fleet. Staff also proposes a \$2 million allocation to continue funding for advanced technology demonstrations.

B. Description of Project Categories Proposed for Fiscal Year 2012-13 Funding

This section describes each project category proposed for funding in fiscal year 2012-13.

Clean Vehicle Rebate Project



CLEAN VEHICLE
REBATE PROJECTSM

Funding Target: \$15 to \$21 million

Synopsis: Consumer rebates for zero-emission and plug-in hybrid light-duty vehicles.

Project Benefits:

- Support transportation sector emission reductions needed in the post-2020 timeframe.
- Spur commercialization of the cleanest vehicles available.



Overview

ARB staff proposes a \$15 to \$21 million funding range for the Clean Vehicle Rebate Project in fiscal year 2012-13. In addition, \$3 million from fiscal year 2008-09 is being reallocated to the Clean Vehicle Rebate Project. The Clean Vehicle Rebate Project provides rebates to California residents, businesses, nonprofit organizations and government entities that purchase or lease a ZEV such as a battery electric or fuel cell electric, or a plug-in hybrid electric vehicle. The Clean Vehicle Rebate Project helps get the cleanest vehicles on the road in California by providing consumer rebates to partially offset the higher initial cost of these advanced technologies. This early investment in clean vehicle technologies will prime the market for the larger number of vehicles needed over the next decade and beyond to meet the State's health based air quality standards and climate change goals. The Clean Vehicle Rebate Project investment — coupled with corresponding investments in vehicle charging and fueling infrastructure by regional governments, the Energy Commission and federal government — is enticing manufacturers to focus early vehicle deployment in California. For a complete list of eligible vehicles, rebate amounts and information about the Clean Vehicle Rebate Project, visit www.energycenter.org/CVRP. A detailed description of the first three years of funding is included in Appendix A.

Efforts to Encourage Zero-Emission Vehicle Deployment in the San Joaquin Valley

Rebates are distributed throughout the State, but concentrated in the San Francisco Bay Area, Los Angeles/South Coast and San Diego regions. This is likely due to targeted marketing by automakers, the demographics of early adopters, additional incentives and access to public charging infrastructure. In response to low rebate demand in the San Joaquin Valley, the Clean Vehicle Rebate Project enhanced its

outreach efforts in this region and is collaborating with the San Joaquin Valley Air Pollution Control District to increase consumer participation by:

- Teaming with the San Joaquin Valley Air Pollution Control District's electric vehicle rebate program that offers an additional rebate on top of the Clean Vehicle Rebate Project
- Promoting both programs through joint public events and media outreach
- Marketing the suite of incentives available to consumers (e.g., High Occupancy Vehicle access, free public charging, local/state/federal vehicle and infrastructure incentives, utility rate discounts)

On March 15, 2012, the San Joaquin Valley Air Pollution Control District launched the Drive Clean! Rebate Program that provides additional vehicle rebates of up to \$3,000 for San Joaquin Valley residents, businesses, non-profit and government entities. Information on this program is available at:

http://www.valleyair.org/Grant_Programs/GrantPrograms.htm#DriveCleanRebateProgram .

Over the past year, the Clean Vehicle Rebate Project has provided 85 percent more rebates to the San Joaquin Valley in fiscal year 2011-12 than in previous fiscal years. The San Joaquin Valley also had the second highest year over year increase in the Clean Vehicle Rebate Project rebates distributed, second only to the greater Sacramento region.

Staff Proposal for Fiscal Year 2012-13

The prevailing challenge this fiscal year is the anticipated gap between projected rebate demand and available AQIP funding. In the year ahead, manufacturers' collective production volumes of clean vehicles for California will range between 15,000 and 20,000 vehicles. Assuming production volumes translate to sales, and sales to rebate applications, the Clean Vehicle Rebate Project will only meet about half of the projected rebate demand¹. With the addition of \$5 million in Energy Commission funds, the Clean Vehicle Rebate Project will likely rebate slightly less than two-thirds of expected demand. Staff's proposal is designed to continue ARB's commitment to advancing clean vehicle technologies, while maintaining the program's consumer-driven focus. Staff's proposal is the outcome of individual and group discussions with clean vehicle manufacturers, consumer advocates and other industry stakeholders, as well as a Clean Vehicle Rebate Project Work Group meeting conducted on March 15, 2012.

A. Proposal to Support Manufacturer Diversity

Through the Clean Vehicle Rebate Project, ARB is encouraging the maturation of a diverse and competitive clean vehicle market. This is consistent with Board direction provided at the July 2011 meeting to promote manufacturer diversity. This issue was discussed in detail at public workshops, working group meetings as well as individual stakeholder meetings. Staff considered several options to address manufacturer diversity; including manufacturer caps based either on number of

¹ Assuming a total \$18 million allocation from ARB (includes \$15 million from fiscal year 2012-13 and \$3 million reallocation from fiscal year 2008-09).

rebates or percentage of available funding or manufacturer/vehicle model set-asides. The latter would be challenging to administer and may result in funds going unused if purchases for certain manufacturer/vehicle models do not materialize. However, significant progress toward a diverse marketplace has been made. In fact, since last October, seven eligible vehicle models have been added to the Clean Vehicle Rebate Project. Recognizing this, staff believes the appropriate approach is to continue the Clean Vehicle Rebate Project as a first-come, first-serve program and allow the market to continue to expand diversity further.

B. Waiting List Discretion

The Clean Vehicle Rebate Project waiting list provision has been a popular feature for consumers and manufacturers alike because it provides a degree of funding certainty during gaps between funding cycles. A waiting list is appropriate when acting as a modest investment to bridge a short-term funding gap; it is not sustainable, however, when demand quickly outstrips available funds. Should the Clean Vehicle Rebate Project fall under the latter scenario, it would likely require restructuring in the future. Staff proposes that the Board provide the Executive Officer discretion on whether to establish a waiting list to bridge the gap between fiscal year 2012-13 and fiscal year 2013-14 funding. A decision-making trigger would be invoked when the remaining vehicle funding reaches \$3 million. Parameters that would be evaluated in making the decision to establish a waiting list include: expenditure rate of Clean Vehicle Rebate Project funding, potential for additional funds, and projected future vehicle volumes. If a waiting list is established, the future funding commitment would be limited to no more than \$5 million.

C. Range Extended Battery Electric Vehicle Eligibility

Staff proposes adding the range extended battery electric vehicle as a zero-emission vehicle type. The range extended battery electric vehicle is a new regulatory vehicle category approved by the Board in January 2012. No other changes are proposed to the eligible vehicle types or rebate amounts.

D. Car Share Allocation

Staff proposes to carry over \$200,000 into fiscal year 2012-13 from the car share set aside established in fiscal year 2011-12. Approximately \$600,000 of the \$1.5 million set-aside has been spent. Staff proposes that the remaining unused car share funds, approximately \$700,000, roll back to the main Clean Vehicle Rebate Project fund if they are not used by the time fiscal year 2011-12 funding has been depleted.

Grantee Solicitation

Staff proposes to issue the solicitation for a grantee to administer the Fiscal Year 2012-13 Clean Vehicle Rebate Project following Board approval of the Funding Plan and passage of the annual State Budget. The same competitive process and eligibility requirements will be used as in previous funding years; the solicitation will be open to individuals, federal, state, and local government entities and agencies, and non-profit

organizations with experience implementing a rebate program and general knowledge of statewide outreach and implementation. Staff proposes allowing up to 6 percent of the project funding to be used for administering the Clean Vehicle Rebate Project.

Future Funding Needs

Nearly all new vehicle sales by the 2040 model year need to be ZEVs and plug-in hybrid electric vehicles in order to achieve California's long term 2050 greenhouse gas reduction goals in the light-duty vehicle sector. California's ZEV regulation is the most technology-forcing piece of the Advanced Clean Car Program. Recent amendments to the regulation strengthen ZEV requirements and require manufacturers to produce increasing numbers of ZEVs and plug-in hybrid electric vehicles in the 2018-2025 model years with 15 percent of new cars produced in 2025 being ZEVs and plug-in hybrid electric vehicles. The continuation of rebate funding in the next few years, in combination with other monetary and non-monetary incentives, is critical to early wide-scale consumer acceptance and adoption of clean vehicle technology.

ARB anticipates that between 15,000 and 20,000 vehicles will be available for sale in California in 2012, followed by increases in production in each of the following years. Table II-2 presents future incentive needs based on vehicle production volumes from the 2012 amendments to the California Zero Emission Vehicle Regulation. Additionally, Governor Brown issued Executive Order B-16-2012 in March 2012 that lays the foundation for 1.5 million zero emission vehicles on California's roadways by 2025. If California vehicle sales track projected production volumes, staff anticipates that AQIP funding alone cannot continue to sustain the Clean Vehicle Rebate Project under its current structure, and that fundamental changes to the program or substantial additional funding will be necessary in the future. Staff will closely monitor the market in setting the course for Fiscal Year 2013-14 Funding Plan.

Table II-2. Incentive Needs Based on Current Clean Vehicle Rebate Project Rebate Amounts

Year	Vehicle Type ¹				Total	
	ZEV		PHEV			
	Volume ²	\$ (M)	Volume	\$ (M)	Volume	\$ (M)
2013	2,300	\$5.80	18,100	\$27.10	20,400	\$32.90
2014	2,300	\$5.70	18,400	\$27.60	20,700	\$33.30
2015	8,900	\$22.30	26,900	\$40.30	35,800	\$62.60
2016	9,100	\$22.70	27,200	\$40.80	36,300	\$63.50
2017	9,200	\$23.00	27,600	\$41.40	36,800	\$64.40
2018	16,800	\$42.00	61,300	\$91.90	78,100	\$134.00
2019	33,500	\$83.70	75,300	\$113.00	108,800	\$197.00
2020	48,300	\$249.00	89,100	\$220.00	137,400	\$469.00

¹ ZEV rebate amount is \$2,500; plug-in hybrid electric vehicle rebate amount is \$1,500.

² Production volumes are based on January 2012 ZEV Regulation Amendments.

Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project

Funding Target: \$10 to \$14 million

Synopsis: Consumer vouchers for about ½ the incremental cost of new hybrid and zero-emission trucks.



Project Benefits:

- Spur early production volumes, lower long-term production cost.
- Reduce criteria pollutants, advance technology to meet long-term SIP commitments.
- Reduce CO₂ emissions; help meet Assembly Bill 32 emission reduction targets.

Overview

ARB staff proposes a \$10 to \$14 million funding range for the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project. Hybrid and zero-emission trucks and buses are now commercially available in multiple vehicle configurations from nearly a dozen vehicle manufacturers. A hybrid-electric vehicle typically uses an electric motor and a diesel-powered engine, which work in tandem to reduce emissions and fuel consumption. Hybrid vehicle technology has the potential to reduce criteria pollutant, air toxic, and greenhouse gas emissions – particularly in urban delivery vehicles, refuse trucks, work trucks, buses, and other vehicles with high stop-and-go or idling duty cycles. Zero-emission trucks and buses are typically powered by a large electric battery (although fuel cells are making technological strides) that typically provide up to 100 miles of range per charge.

Both hybrid and zero-emission vehicles provide fuel cost savings to the fleet owner. With reductions to the upfront vehicle cost combined with fuel savings, these vehicles have the potential to be cost competitive with conventional vehicles. Production capacity has substantial growth potential for both hybrid and electric trucks and buses, but current low production volumes contribute to a \$25,000 to \$80,000 vehicle cost premium for hybrid trucks and up to \$120,000 cost premium for zero-emission trucks. ARB expects production costs to decline as hybrid driveline and battery production volumes increase. When this occurs, the fuel economy payback period should shorten to the point where a hybrid or zero-emission truck purchase is economical without incentives. The Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project is intended as a multi-year incentive program to bridge this gap. Additional information and statistics regarding the first 2 years of the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project implementation can be found in Appendix A.

Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project Program Demand

The Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project has provided vouchers to help California fleets purchase over 1,000 hybrid and zero-emission trucks and buses. While Year 1 (fiscal year 2009-10) Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project voucher demand was high, fleet participation in Year 2 (fiscal year 2010-11) has been slower than expected (Figure 1), with approximately \$10 million remaining for hybrid and zero-emission vehicle vouchers as of May 1, 2012. Discussions with stakeholders suggest participating fleets may have already turned over much of their existing older, urban delivery vehicle fleet for new hybrids in Year 1 when the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project funds initially became available. Some fleet representatives have also suggested voucher amounts be increased to further stimulate program demand. Additional discussion regarding steps ARB is taking to address these deployment challenges can be found in Appendix B.

Figure 1. Hybrid and Zero-Emission Vehicle Funding Demand

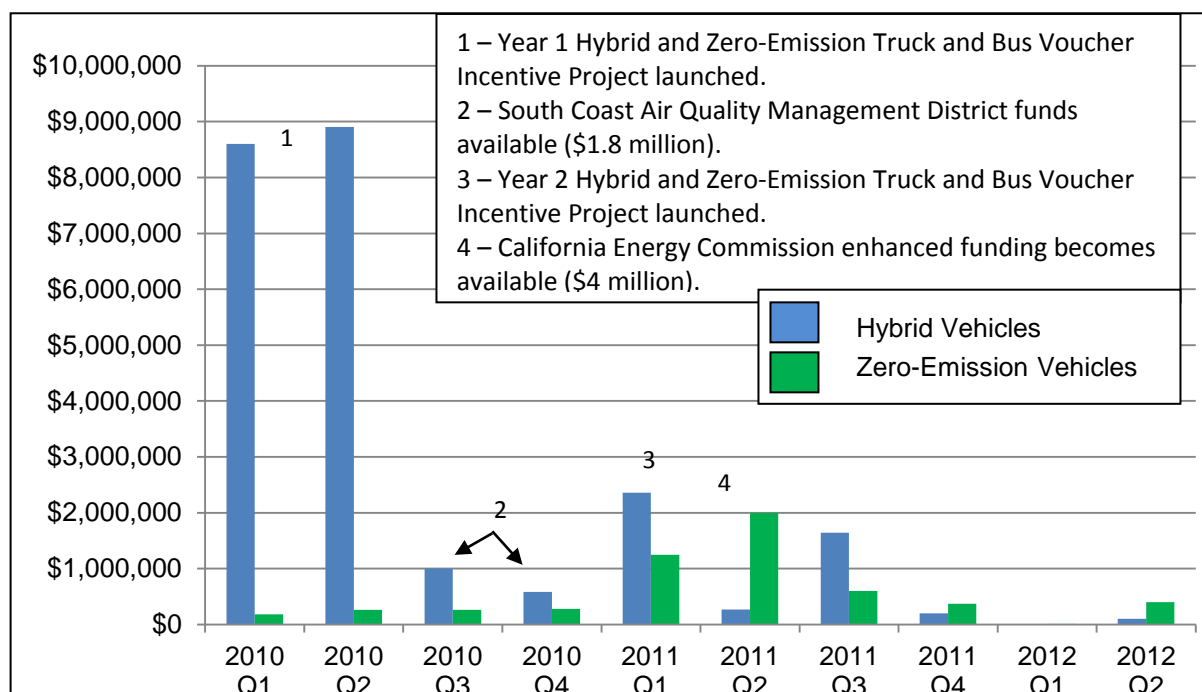


Figure includes zero-emission commercial vehicles funded via the Clean Vehicle Rebate Project in 2010.

Staff Proposal for Fiscal Year 2012-13

ARB has delayed launching the Year 3 Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project since approximately \$10 million in funds remain available. Staff proposes combining the remaining Year 2 Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project funds with the \$11 million Year 3 funds (approved by the Board last July) and launch Year 3 in July 2012 utilizing the proposed higher voucher amounts and other program enhancements described in this section.

Staff's proposal for the fiscal year 2012-13 Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project is intended to stimulate near-term demand for hybrid and zero-emission vehicles by: 1) increasing vouchers for the cleanest technologies available and 2) adding new eligible vehicle types.

A) Zero-Emission Vehicle Vouchers

Zero-emission technology represents the “gold standard” for the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project, as the program is intended to accelerate development, deployment and consumer acceptance of the cleanest technology needed to meet California's air quality and climate change goals. Staff proposes increasing the voucher amounts for zero-emission vehicles (Table II-3) from the existing typical voucher amount of \$20,000 to up to \$45,000 per vehicle, depending on gross vehicle weight. The proposed voucher amounts would provide close to 50 percent of the incremental cost of zero-emission trucks.

When the Board approved the first AQIP Funding Plan in 2009, it was unclear whether zero-emission commercial vehicles had the near-term viability to make inroads into the California truck fleet. Zero-emission commercial vehicles were added to the Clean Vehicle Rebate Project as an AQIP-eligible vehicle type since that project focused primarily on zero-emission vehicle technologies. These vehicles were shifted from the Clean Vehicle Rebate Project to the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project in AQIP's Fiscal Year 2010-11 Funding Plan since the voucher structure more effectively facilitates truck and bus purchases. This technology has since demonstrated an increased near-term viability in the advanced technology truck market. Staff also heard feedback from stakeholders that the current voucher levels were too low with many vehicles incremental cost exceeding \$100,000.

To date, AQIP has helped deploy in California over 250 zero-emission trucks and buses from three vehicle manufacturers. Despite their much higher incremental cost, demand for zero-emission trucks and buses is increasing faster than that for hybrids (Figure 1). The Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project briefly offered higher voucher amounts for zero-emission commercial vehicles when the Energy Commission directed \$4 million of its fiscal year 2010-11 Assembly Bill 118 funding project in July 2011. The Energy Commission incentives increased the typical Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project voucher for zero-emission vehicles from \$20,000 to \$48,000 for vehicles manufactured in California and to \$40,000 for vehicles manufactured outside of California². These funds were exhausted within 2 weeks, as California fleets quickly ordered 150 zero-emission trucks to take advantage of the enhanced vouchers.

² The San Joaquin Valley Air Pollution Control District also has approved \$2 million to augment the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project funding for hybrid and zero-emission vehicles deployed in the Valley. More information can be found at: www.valleyair.org/Board_meetings/GB/agenda_minutes/Agenda/2011/August/Agenda_Item_15_Aug_18_2011.pdf.

Staff's proposed fiscal year 2012-13 Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project zero-emission vehicle voucher amounts are similar to those offered when the additional Energy Commission funding was available.

Table II-3: Proposed Zero-Emission Truck and Bus Voucher Amounts

Gross Vehicle Weight (lbs)	Base Vehicle Incentive¹	
	1 to 100 vehicles	101 to 200 vehicles
5,001 – 8,500	\$12,000	\$10,000
8,501 – 10,000	\$18,000	\$12,000
10,001 – 14,000	\$30,000	\$20,000
14,001 – 19,500	\$35,000	\$25,000
19,501 – 26,000	\$40,000	\$30,000
> 26,000	\$45,000	\$35,000

The first three Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project-eligible vehicles purchased by a fleet per funding year are eligible for the following additional voucher amount: \$2,000/vehicle if below 8,501 lbs; \$5,000/vehicle if 8,501 to 10,000 lbs; and \$10,000/vehicle if over 10,000 lbs.

- 1- A zero-emission school bus is eligible for the same additional funding as a hybrid school bus as identified in Table II-5.

Staff proposes that unredeemed Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project vouchers – with the exception of those already receiving the additional Energy Commission funds – be eligible for the higher voucher amounts described in Table II-3, if redeemed after Board approval of staff's proposal. Staff expects the increased voucher amounts identified in this section will significantly increase demand, help boost production, and support a robust California market for zero-emission commercial vehicles over the next 2 years.

B) Maximum Vouchers per Fleet

Staff proposes increasing the maximum number of allowable vouchers per fleet from the existing limit of 100 vouchers to 200 vouchers (Tables II-3 and II-4). Raising the maximum number of vouchers per fleet to 200 will provide flexibility for larger fleets that have driven Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project demand to receive additional vouchers.

C) Funding Tiers

Staff proposes to simplify funding tiers from the 3 levels approved in fiscal year 2011-12 to the 2 levels identified in Tables II-3 and II-4. The Base Vehicle Incentive for vehicles 1 through 100 remains unchanged, while vouchers 101 through 200 would be discounted by about one-third. The lower voucher amounts for vehicles 101-200 allow for more vehicles to be funded if several fleets purchase in these volumes over the year.

Table II-4: Eligible Hybrid Truck and Bus Proposed Voucher Amounts

Gross Vehicle Weight (lbs)	Base Vehicle Incentive	
	1 to 100 vehicles	101 to 200 vehicles
6,001 – 8,500 (plug-in hybrids only) ¹	\$ 8,000	\$ 6,000
8,501 – 10,000 (plug-in hybrids only) ¹	\$10,000	\$ 8,000
10,001 – 19,500	\$15,000	\$10,000
19,501 – 33,000	\$20,000	\$12,000
33,001 – 38,000	\$25,000	\$15,000
> 38,000	\$30,000	\$20,000

The first three vouchers redeemed by a fleet per funding year are eligible for the following additional voucher amount: \$2,000/vehicle if below 8,501 lbs; \$5,000/vehicle if 8,501 to 10,000 lbs and \$10,000/vehicle if over 10,000 lbs. Additional voucher funding opportunities are identified in Table II-5.

- 1- Vehicle must be ARB-certified as an Ultra-Low Emission Vehicle (ULEV). Voucher amount is increased by \$2,000 for each of the following: ARB-certification as a Super Ultra Low Emission Vehicle (SULEV) and ARB-certification for zero-evaporative emissions.

To encourage fleets – particularly small fleets – to invest in hybrid technology, up to an additional \$10,000 (depending on vehicle weight) will be provided for the first 3 vouchers received by a fleet per funding year. Staff hopes to draw more small fleets and first-time purchasers into the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project by further reducing the incremental cost for small volume purchases. This concept was approved by the Board last year as part of the Year 3 Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project program structure. Existing unredeemed vouchers for a fleet's first 3 hybrid or zero-emission vehicles would be eligible for this additional \$10,000 if the vouchers are redeemed after Year 3 Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project launch in July 2012.

D) Commercial Plug-in Hybrid Pick-Up Trucks

Staff proposes to support the production and deployment of commercial plug-in hybrid pick-up trucks in the 6,001 to 8,500 lbs. gross vehicle weight rating (GVWR). The first commercial vehicles – expected to be available for purchase by late 2012 – would have an all-electric range of up to 40 miles before a gasoline-powered engine starts to recharge the vehicle batteries. Electrification of these vehicles has the potential for significant emission benefits due to the relatively high truck population in this weight class.

Table II-4 identifies staff's proposed voucher amounts for this vehicle type. To be eligible, the vehicle must be ARB-certified as an ULEV³. An additional \$2,000 would be provided for each plug-in hybrid up to 10,000 lbs. gross vehicle weight for ARB-certification to SULEV standard and for zero-evaporative emissions, to encourage manufacturers to further develop the cleanest technologies. Only plug-in

³ Exhaust emission standards as defined in California Low-Emission Vehicle Regulations, California Code of Regulations Title 13 section 1961.

hybrid vehicles purchased by public, non-profit or commercial entities for work purposes are eligible for Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project funding since the intent of the project is to promote funding for commercial vehicles. Personal or passenger vehicles in this weight class are not eligible for the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project but may be eligible for the Clean Vehicle Rebate Project. Eligibility of this vehicle type will be delayed until implementation of fiscal year 2012-13 funding if implementation cannot be accommodated within the existing administrative budget. Staff will re-evaluate this category during development of the Fiscal Year 2013-14 AQIP Funding Plan to determine if it should remain Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project eligible in future funding years.

E) Exportable Power

Staff proposes providing an additional \$2,000 incentive for Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project-eligible plug-in hybrid vehicles between 6,000 lbs and 10,000 lbs GVWR that provide exportable power. Exportable power allows workers to plug in to an onboard electrical outlet eliminating the need to use portable generators to power worksite operations. The proposed \$2,000 incentive reflects about half the incremental cost of this option. Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project-eligible plug-in hybrid vehicles below 10,001 lbs have been targeted for funding as they are most likely to utilize exportable power for work purposes. ARB staff will evaluate, in coordination with the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project Work Group, whether to extend the \$2,000 exportable power incentive to Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project-eligible vehicles in other weight categories. Eligibility of exportable power will be delayed until implementation of fiscal year 2012-13 funding if implementation cannot be accommodated within the existing administrative budget.

F) Additional Hybrid Vehicle Voucher Funding

Staff proposes several opportunities for additional voucher funding should a hybrid vehicle exceed minimum Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project eligibility requirements. These vehicles have the potential to provide additional emission reductions as well as further advanced the technology towards a more robust system. These proposed voucher enhancements are discussed below and detailed in Table II-5.

Table II-5: Opportunities for Additional Hybrid Vehicle Voucher Funding¹

Gross Vehicle Weight (lbs)	Plug-in or Hydraulic Hybrid ²	School Bus ³	ARB Certification (full vehicle)	Early Heavy-Duty Vehicle On-Board Diagnostics Compliance ⁴
8,501 – 10,000 (plug-in hybrids only)	NA	\$ 5,000	NA (required)	NA (full OBD required)
10,001 – 14,000	\$10,000	\$10,000	Up to \$20,000	Up to \$20,000
14,001 – 19,500				
19,501 – 33,000				
33,001 – 38,000				
> 38,000				

- 1- The total of all advanced technology vehicle subsidies, including the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project Base Vehicle Incentive and all voucher enhancements may not exceed the assumed vehicle incremental cost identified in Table II-6.
- 2- Vehicle must demonstrate at least a 40 percent fuel economy benefit relative to its non-hybrid counterpart as part of its Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project eligibility application.
- 3- Zero-emission school buses also eligible for this voucher bump-up.
- 4- Specific criteria for determining early OBD compliance will be determined by ARB staff and interested stakeholders during public Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project Work Group meetings.

Plug-in and Hydraulic Hybrids- Staff proposes an additional \$10,000 for plug-in and hydraulic hybrids that demonstrate additional benefits. These vehicles typically cost up to thirty percent more than traditional battery-electric hybrids, but have the potential for greater criteria pollutant and greenhouse gas emission reductions than traditional hybrids. While plug-in and hydraulic hybrid vehicle technologies have made significant strides over the past few years, no plug-in hybrids and only two hydraulic hybrids are Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project-eligible as of May 1, 2012.

School Buses- Staff proposes continuing the existing Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project policy of providing an additional \$5,000 to \$10,000 for hybrid or zero-emission school bus purchases. Combining Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project and ARB Lower Emission School Bus Program funds can provide up to 90 percent of the total typical hybrid bus cost of \$200,000. Other public

Figure 2. The Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project-eligible Autocar-Parker hydraulic hybrid refuse hauler



Figure 3. Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project eligible zero-emission school bus



funding, such as federal or local air district funds, could be used to pay for the remaining cost.

Hybrid Vehicle Certification- While all light- and complete medium-duty vehicles (i.e. below 14,000 lbs gross vehicle weight) must be ARB-certified to be sold in California, heavy-duty vehicles (14,000 lbs gross vehicle weight and above) are not required to be ARB-certified. Rather, heavy-duty vehicle engines are certified for use in a particular vehicle weight class and certain vocations, such as urban buses. However, in a hybrid truck, an ARB-certified engine is used in conjunction with a hybrid driveline which makes it more challenging to determine emission benefits, particularly over a diversity of urban and suburban duty cycles. As hybrid trucks and buses transition from a niche to a mainstream choice, full hybrid vehicle certification is critical to identify the emission benefits that drive policy and deployment strategies.

The Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project currently offers an additional \$5,000 for hybrid trucks or buses above 14,000 lbs gross vehicle weight that are voluntarily ARB-certified, yet very few hybrid truck and bus manufacturers have chosen to do so. Staff proposes to increase Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project incentive for ARB-certified heavy-duty hybrids from \$5,000 up to \$20,000 to further encourage voluntary full hybrid vehicle certification.

On-Board Diagnostics- In May 2009, the Board adopted 'On-Board Diagnostic Regulations for Heavy-Duty Engines and Vehicles' (HD OBD) that require heavy-duty vehicles and engines be equipped by 2013 with ARB-certified on-board diagnostics systems that monitor engine and vehicle after-treatment to ensure in-use vehicle emissions do not exceed a certain threshold⁴. ARB staff will be bringing HD OBD amendments to the Board in July 2012 to provide additional time for hybrid heavy-duty vehicles – for which On-Board Diagnostic (OBD) poses additional complexities – to comply with these requirements.

Staff proposes to provide an additional voucher amount of up to \$20,000 per vehicle that demonstrates early or partial OBD compliance as required by HD OBD or its Amendments. The definition of early or partial OBD compliance would be determined in consultation with ARB, the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project Work Group and other stakeholders based upon factors such as technical feasibility, cost of early compliance, and market share projected to achieve early or partial compliance. For more information regarding ARB's proposed HD OBD Amendments, visit <http://www.arb.ca.gov/msprog/obdprog/obdprog.htm>.

⁴ Final Regulation Order: On-Board Diagnostic System Requirements--2010 and Subsequent Model-Year Heavy-Duty Engines, California Air Resources Board, www.arb.ca.gov/msprog/obdprog/hdobdreg.htm .

G) Assumed Incremental Cost

The Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project requires that the sum of all advanced technology vehicle subsidies— including the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project voucher – does not exceed a vehicle’s incremental cost⁵. In rare instances where this occurred, the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project voucher has been discounted to ensure public funding does not exceed incremental cost. Incremental cost is currently determined on a per vehicle basis equaling the difference between a conventional new truck or bus and a Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project-funded vehicle. This process for determining incremental cost, and the maximum allowable voucher amount, can be an administrative burden and provides a disincentive for manufacturers to lower vehicle prices.

Staff proposes that the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project incorporate assumed vehicle incremental costs as identified in Table II-6. These proposed assumed vehicle incremental costs ensure all manufactures have the opportunity to reasonably offset the incremental cost of their vehicles.

The additional incentive of up to \$10,000 for a fleet’s first three vouchers is not included in incremental cost calculations. Incremental costs will be determined on a case-by-case basis for transit/shuttle buses, plug-in hybrid vehicles, fuel cell vehicles, and hydraulic hybrid vehicles, as well as incremental costs for other vehicles not typically funded by the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project.

Table II-6: Assumed Vehicle Incremental Cost

Gross Vehicle Weight	Hybrid	Zero-Emission
5,001 – 6,000 lbs	N/A	\$ 30,000
6,001 – 8,500 lbs	\$20,000	\$ 40,000
8,501 – 10,000 lbs	\$25,000	\$ 50,000
10,001 – 14,000 lbs	\$30,000	\$ 65,000
14,001 – 19,500 lbs	\$40,000	\$ 75,000
19,501 – 26,000 lbs	\$50,000	\$100,000
26,001 – 33,000 lbs	\$60,000	\$120,000
33,000 – 38,000 lbs	\$70,000	case-by-case
>38,000 lbs	\$80,000	

⁵ Public school buses are an exception to this rule. For public school buses, the sum of Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project and other public funding may not exceed the full school bus cost. The additional up to \$10,000 incentive for a fleet’s first three vouchers is not included in incremental cost calculations.

H) Aerial Boom Vehicles with electric power take-off

Aerial boom vehicles are typically used by utility companies, forestry services, signage companies, and others to lift personnel in a large bucket to a height necessary for aerial work. These vehicles typically idle the main engine to power the aerial boom, often for hours per day and in residential neighborhoods. An aerial boom vehicle with electric power take-off is equipped with a battery to power the aerial boom, eliminating the engine idle time.

Figure 4. Aerial boom vehicle with electric power take-off



Staff proposes extending Hybrid and Zero-Emission Truck and Bus Voucher

Incentive Project eligibility to electric power take-off-powered aerial boom vehicles above 26,000 lbs GVWR with a working boom height of at least 50 feet. While smaller aerial boom vehicles have a higher population, the heavier vehicles typically provide more significant and predictable emission benefits due to their high-idle times. Staff recommends this largest class of aerial boom vehicles with electric power take-off be eligible for the same voucher amounts as hybrid vehicles between 19,501 to 33,000 lbs GVWR (Table II-4). Staff does not propose marrying voucher funding levels to vehicle GVWR for electric power take-off as most aerial boom vehicles above 26,000 lbs generally use the same electric power take-off package, regardless of vehicle weight. The proposed voucher amount reflects approximately one-half the incremental cost of this technology. Staff has developed this proposal in consultation with the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project Work Group, the Energy Commission, Calstart, public utilities, technology manufacturers, and other stakeholders.

The California market for large aerial boom vehicles is relatively small – staff expects just a few dozen vehicles would receive Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project funding under this new project category. However, the technology is proven, commercialized, and eliminates the need for up to four hours per day of main engine idling under typical operations. Staff hopes incentive funding for this category will help advance efforts to develop and deploy electric power take-off for other vehicles and equipment with remote power needs. ARB will evaluate potential Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project funding for other potential electric power take-off technology applications as these technologies mature and become fully commercialized. Staff may also propose expanding eligibility to smaller electric power take-off-powered aerial boom vehicles in future funding years as more data becomes available regarding these vehicles' duty cycles and emission benefits.

I) Hybrid Off-Road Equipment

The Hybrid Off-Road Equipment Pilot Project, approved by the Board as part of fiscal year 2010-11 AQIP Funding Plan, provides the University of California at Riverside Center for Environmental Research and Technology (CE-CERT) almost \$1 million to accelerate deployment of commercialized hybrid construction equipment and \$1 million to evaluate the equipment's emission benefits during typical operations with the goal of possible future AQIP deployment funding.

While equipment deployment funds are nearly depleted, preliminary equipment test results will likely not be available until late 2012⁶. It is premature without the emissions testing results to set aside additional funding for hybrid equipment deployment; however, waiting until Fiscal Year 2013-14 Funding Plan could delay funding for hybrid equipment deployment until early 2014. Staff proposes the flexibility to direct up to \$2 million of fiscal year 2012-13 Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project funding towards additional deployment of hybrid off-road equipment. Staff would make this adjustment in consultation with the Off-Road Equipment Pilot Project Work Group and other interested stakeholders and in consideration of factors such as hybrid equipment testing results, potential hybrid equipment consumer demand, and remaining available Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project funding. These funds would be administered by the fiscal year 2012-13 Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project Grantee. Additional information regarding implementation of the ongoing Hybrid Off-Road Equipment Pilot Project can be found in Appendix A.

Grantee Solicitation

ARB staff proposes to issue the Fiscal Year 2012-13 Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project Solicitation in late 2012 and expects program launch in early 2013. Similar to last year, the solicitation will be open to individuals, federal, state, and local government entities and agencies, and organizations with California heavy-duty vehicle, vehicle incentive, or air quality experience. Solicitations will be evaluated using scoring criteria similar to last fiscal year, and the grantee will be responsible for outreach and implementation of the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project statewide. Staff proposes allowing up to 8.5 percent of the project funding to be used for administrative costs. These administrative costs are higher than those allowed for the Clean Vehicle Rebate Project because of the additional work involved in tracking vouchers through the entire vehicle purchase process.

⁶ As of March 15, 2012, CE-CERT has provided \$675,000 to help deploy nine hybrid caterpillar D7E dozers and an additional \$171,000 to deploy six hybrid Komatsu HB215LC-1 excavators.

Funding Contingency

Staff expects the proposed Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project voucher amounts and program structure will provide a significant boost to program demand. Should this demand not materialize, the proposed fiscal year 2012-13 Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project funding allocation may be reallocated as follows:

- 1) Up to half of the allocated funding may be redirected to other fiscal year 2012-13 AQIP projects if remaining Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project funds exceed remaining Clean Vehicle Rebate Project funds as of November 1, 2012.
- 2) Additional funds may be redirected to other fiscal year 2012-13 AQIP projects if remaining Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project funding exceeds \$10 million as of January 1, 2013.

Any reallocation of fiscal year 2012-13 Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project funding to other AQIP projects will be conducted in consultation with the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project Work Group and other interested AQIP stakeholders.

Future Funding Needs

Because the natural turnover of trucks and buses is slow, a significant increase in hybrid and zero-emission truck and bus deployment is needed over the next several years to meet California's longer term air quality goals. ARB is developing a vision document, along with other stakeholders, describing possible technology scenarios for meeting the federal 8 hour ozone standard in the 2030 timeframe and achieving 80 percent greenhouse gas emission reductions by 2050 pursuant to Executive Order S-03-05. ARB staff expects the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project will continue to provide a critical early investment to help realize this long-term vision. Additional information regarding how investments in the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project can help meet early visioning document milestones can be found in Appendix B.

Advanced Technology Demonstration Projects



Funding Target: \$2 to \$5 million

Synopsis: Demonstrate the viability of advanced technology vehicles, equipment or emission controls.

Project Benefits:

- Accelerate commercialization and deployment of cleaner technologies in the California marketplace.
- Support California's goals for criteria pollutant, air toxics, and greenhouse gas emission reductions.

Overview

ARB staff proposes a \$2 to \$5 million funding range for Advanced Technology Demonstration Projects. ARB's goal in funding demonstration projects under AQIP is to help accelerate the next generation of advanced technologies to reduce emissions from mobile sources. AQIP funding would be used to demonstrate the viability of new technologies with the potential for commercialization within 3 years of demonstration and the ability to gain significant market penetration. To date, ARB has primarily focused its limited demonstration project funds in the off-road sector. This complements the Energy Commission's Assembly Bill 118 advanced technology demonstration funds which have focused primarily on on-road vehicles.

Over the course of the last 3 years, the types of projects funded have seen a transition as technology transfers from different sectors and as the technology achieves more significant emission reductions. For example, AQIP has invested \$2.6 million in locomotives and has moved from demonstrating diesel particulate filters on line-haul and switcher locomotives in Year 1, to demonstrating Tier-4 technologies in switchers in Year 2 and demonstrating technologies approaching Tier-4 standards in high-horsepower locomotives in Year 3. In the future, funding for locomotives will likely be directed at projects meeting or exceeding the emission benefits of previously funded projects. On the marine side, AQIP funding helped successfully demonstrate the retrofit of an in-service tug boat with hybrid technology originally designed for new tug boats. This demonstration provides an avenue for tug boat operators to clean up their existing fleet, which is critical since these boats operate sometimes in excess of 40 years. Additional information regarding the implementation of Advanced Technology Demonstration Projects can be found in Appendix A.

Proposed Fiscal Year 2012-13 Demonstration Project Categories

ARB staff proposes at least two demonstration project categories for fiscal year 2012-13 funding cycle. Staff proposes to initially focus the demonstration funds on categories that have not received funding in the past with additional categories identified if more funding becomes available. Initial categories include:

- *Zero-emission off-road equipment:* Staff is proposing up to \$1 million for demonstration of zero-emission off-road equipment. Eligible projects may include, but are not limited to, transport refrigeration, ground support, cargo handling, and construction equipment.
- *Zero-emission transit vehicles:* Staff is proposing up to \$1 million for demonstration of zero-emission transit vehicles. Due to the high costs of these technologies, this funding will either need a much larger cost share if part of a new build demonstration, or could be used for repowering first generation with current generation fuel cell or battery electric technologies.

If additional funding becomes available through the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project funding contingency, staff proposes to prioritize zero-emission drayage trucks with up to \$1 million in funding.

If additional demonstration project funding becomes available beyond those projects identified above, staff proposes the option of funding additional demonstration projects based on Board priority, available funds, and needs identified from existing demonstrations. Staff is proposing the following demonstration categories in priority order:

- Liquid natural gas ferry demonstration
- Agricultural Tier-4 and hybrid tractor share project
- Marinization of Tier-4 loco engines for tugboats and ferries
- Post Tier-4 locomotive

Details on projects will be vetted through the AQIP Demonstration Project Working Group. Information on this working group may be found on ARB's Assembly Bill 118 AQIP Advanced Technology Demonstration Projects webpage at <http://www.arb.ca.gov/msprog/aqip/demo.htm>.

Grantee Solicitation

As in the previous funding cycles, staff proposes that grant solicitations for demonstration projects be open to local air districts and other public agencies. Public entities are encouraged to partner with one or more technology demonstrators and end users in their regions. At least 50 percent of each demonstration project's funds must be provided from a non-Assembly Bill 118 source, and at least 10 percent of this match must be in cash with the remainder allowed as in-kind contribution. The requirement of match funding leverages AQIP funds while encouraging grantees to be invested in

successful completion of the projects. Up to 10 percent of the total project budget would be available for project administration consistent with previous funding cycles.

C. Contingency Plans

The proposed Funding Plan is based upon the latest available information. However, circumstances may change between the time the Board approves the plan and the time project solicitations are issued or project funds awarded. This section describes staff's proposed contingency plans should mid-course corrections be needed to ensure that AQIP funds are spent expeditiously and efficiently. Under these provisions, the Board would grant the Executive Officer authority to make the necessary mid-course adjustments to address the cases described below.

Available AQIP Funds

Over the past 2 funding cycles, revenues in the Air Quality Improvement Fund have been nearly 30 percent lower than the amount appropriated in the State Budget, so ARB had to scale back its AQIP project funding accordingly. As a result, ARB has awarded about \$28 million in grants each year rather than the \$40 million annual total included in each of the Board-approved Funding Plans. Based on this experience, ARB staff is proposing contingency provisions in the event revenues in fiscal year 2012-13 are lower than the State Budget appropriation as well as to address potential funding that ARB may receive to augment specific AQIP projects.

The proposed Funding Plan includes a total AQIP project funding total of \$40 million based on the Governor's revised State Budget. However, ARB is also establishing minimum allocations for each project category based on a \$27 million revenue total. The \$27 million total is a conservative estimate based on the revenues over the past three years. These allocations are presented in Table II-7.

Table II-7. Contingency Plan for Addressing Reduced Revenues

Project Category	Minimum Allocation¹ (\$millions)	Allocation Based on \$40 Million Budget² (\$millions)
Clean Vehicle Rebate Project	15	21
Hybrid Truck and Bus Voucher Incentive Project	10	14
Advanced Technology Demonstration Projects	2	5
TOTAL	27	40

¹ Based on a conservative estimate of \$27 million in revenues for AQIP projects.

² Based on Governor's revised State Budget of \$43 million minus estimated administrative costs.

Establishing minimum targets for each category based on a conservative funding scenario reduces the risk of over-obligating funds beyond available revenues, and avoids disproportionately affecting projects that start later in the fiscal year if revenue projections are lowered. If revenues come in between the \$27 million minimum allocation and the \$40 million appropriated amount, funding for each project category would be scaled according to the targets in Table II-7 and an updated assessment of demand for funding in each project category. ARB staff plans to release initial grant solicitations based on the minimum allocations in Table II-7. However, the solicitations and grant agreements will be written with provisions to increase the awarded funding if there are sufficient revenues or if additional funding becomes available. Any allocation adjustments outside those specifically prescribed in the proposed Funding Plan would require Board approval.

Minor Technical/Administrative Changes

The proposed Funding Plan specifies all policy-related details regarding the projects to be funded. However, technical or administrative changes in implementation procedures may be needed from time to time to ensure these projects are successful. Staff proposes a transparent process in which minor changes to a project category would be publicly vetted through the public AQIP work groups that have been established to discuss the implementation details of each project. These changes would be within the Funding Plan parameters approved by the Board.

D. Fiscal Year 2012-13 Project Solicitations

Following Board approval of the proposed Funding Plan and after the final State Budget is signed; staff will release solicitations for each of the project categories in order to select a grantee to implement the projects in fiscal year 2012-13. The solicitations will include all the programmatic details potential grantees need to apply for funds, in addition to the criteria upon which the applications will be evaluated and scored.

In accordance with AQIP Guidelines, ARB will begin issuing project solicitations after the Board approves the funding plan and no later than 90 days after the funds are appropriated in the State Budget. The public work groups established for each project category will continue to be the primary avenue for seeking input and feedback on solicitations and implementation manuals. Staff will monitor and evaluate AQIP projects over the course of the fiscal year and share project data with the work groups.

III. References

In developing the proposed Funding Plan, ARB staff relied on information from previous Board approved AQIP Funding Plans, AQIP Guidelines, and the Energy Commission's Assembly Bill 118 Investment Plans . Links to this reference material are listed below:

- Air Resources Board. Staff Report: Initial Statement of Reasons for Proposed Rulemaking, Proposed AB 118 Air Quality Guidelines for the Air Quality Improvement Program and the Alternative and Renewable Fuel and Vehicle Technology Program, Released August 8, 2008.
<http://www.arb.ca.gov/regact/2008/aqipfuels08/aqipfuels08.htm>
- Air Resources Board. Staff Report: Initial Statement of Reasons for Proposed Rulemaking, Proposed AB 118 Air Quality Improvement Guidelines, Released March 6, 2009. <http://www.arb.ca.gov/regact/2009/aqip09/aqip09.htm>
- Air Resources Board. Proposed AB 118 Air Quality Improvement Program Funding Plan For Fiscal Year 2009-10. Approved April 24, 2009.
http://www.arb.ca.gov/msprog/aqip/fundplan/aqip_FY09-10_approved.pdf
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